



**Date:** November 21, 2023

**To:** Robert Molloy, Director, Office of Highway Safety

**From:** John Humm, Survival Factors Investigator, HS-22

**Subject:** Close-out Memorandum - Battery Electric Transit Bus Fire while not in service in Philadelphia, Philadelphia County, Pennsylvania - HWY 23IH002.

On Wednesday, November 9, 2022, at 8:43 a.m. eastern standard time, a battery electric transit bus caught fire while charging at the Southeastern Pennsylvania Transit Authority (SEPTA) Southern Bus Depot, 1934 Johnston St., Philadelphia, PA. The bus was not in service and was unoccupied during the event.

At approximately 8:10 a.m. Bus 912, a 2018 Proterra E2 Catalyst BEB40, was parked inside Bay 4 and charging at Station #14. Roughly 30 minutes later, a thermal event was initiated from a battery pack behind the front axle. The sprinkler system was activated three minutes later. The Philadelphia Fire Department (PFD) responded and controlled the thermal runaway by continuously applying water to the battery pack at the location of the flames. The bus was towed from the building and isolated in a "sandbox" made from jersey barriers, plastic, sand, and water to mitigate reignition. No injuries were reported. The event was contained to a single battery pack, and the impacted battery did not reignite after the PFD intervention.

Proterra representatives arrived in Philadelphia on November 10, 2022, and met with SEPTA Bus Engineering and Maintenance. The data logger from Bus 912 was removed and installed in Bus 902 for retrieval and upload to the cloud. Fault codes for "high relative humidity," "low internal isolation," and "coolant flood" were reported before the thermal event. The "high relative humidity" fault code was also observed in at least one other bus (916). Proterra's initial investigation concluded that the accumulation of liquid inside the battery pack enclosure likely caused the thermal event. They reviewed telemetry data fleet-wide and found twenty-eight battery packs (out of approximately 4,000) in nineteen vehicles with similar fault codes. Proterra issued a recall of the vehicles on November 30, 2022, and the root cause of the fault codes was under investigation and not determined at the time of this report.

This investigation supports the NTSB's interest in Battery Electric Transit Bus Fires that were separately investigated in Hamden, CT, and Indianapolis, IN. No further

action beyond this memorandum will be taken; however, information from the items in the docket may be used to support safety issues identified in future investigations, reports and/or other mission-related activities.

Approved:  1/21/23  
Robert Molloy Date